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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,007	06/04/2001	Tomohiko Kudo	WN-2343	3644
7590 04/27/2004			EXAMINER	
McGinn & Gibb, PLLC Suite 200 8321 Old Courthouse Road Vienna, VA 22182-3817			SOWARD, IDA M	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/872,007

Applicant(s)

KUDO ET AL.

Examiner

Ida M Soward

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 3-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the Applicants amendment filed February 18, 2004.

#### ***Election/Restrictions***

When the elected claims are allowable and non-elected will be rejoined if the non-elected claims contain all the limitations of the elected claims.

#### ***Response to Amendment***

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houlihan et al. (US 6,258,673 B1) in view of Baumann (5,866,445).

Houlihan et al. teach a semiconductor device comprising: a CMOS semiconductor device; a first MOSFET 205 comprising a first gate oxide film 24; a

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second MOSFET 405 comprising a second gate oxide film 28 thicker than the first gate oxide film 22; and a third MOSFET 305 comprising a third gate oxide film 26 which is thicker than the first gate oxide film 24 and is thinner than the second gate oxide 28 (Figure 4, cols. 1 and 3, lines 4-6 and 33-52, respectively).

In regard to claim 20, Houlihan et al. teach a semiconductor device comprising: a first MOSFET 205 comprising a first gate oxide film 24; the second MOSFET 405 comprising a second gate oxide film 28 thicker than the first gate oxide film 24; the third MOSFET 305 comprising a third gate oxide film 26 which is thicker than the first gate oxide film 24 and is thinner than the second gate oxide film 28. In regard to the threshold levels, Houlihan et al. teach forming an oxide film having a thickness appropriate for a desired threshold level (abstract).

However, Houlihan et al. fails to teach which MOSFET corresponds to n-type and which MOSFET corresponds p-type. Baumann teaches a CMOS structure wherein nitrogen (N) is introduced at the PMOS gate silicon which is the preferred method of assuring that the PMOS gate oxides will be thinner than their NMOS counter parts (cols. 1-2, lines 49-60, 24-32 and 57-64, respectively).

Since Houlihan et al. and Baumann are from the same field of endeavor (CMOS semiconductor devices), the purpose disclosed by Baumann would have been pertinent in the art of Houlihan et al. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the CMOS structure as taught by Houlihan et al. with the PMOS and NMOS gate oxide thickness as taught

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by Baumann to impede the growth of oxides by altering the surface reaction rates (col. 2, lines 59-60).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 and 20 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M Soward whose telephone number is 571-272-1845. The examiner can normally be reached on Monday - Thursday, 6:30 am to 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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IMS  
April 15, 2004



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